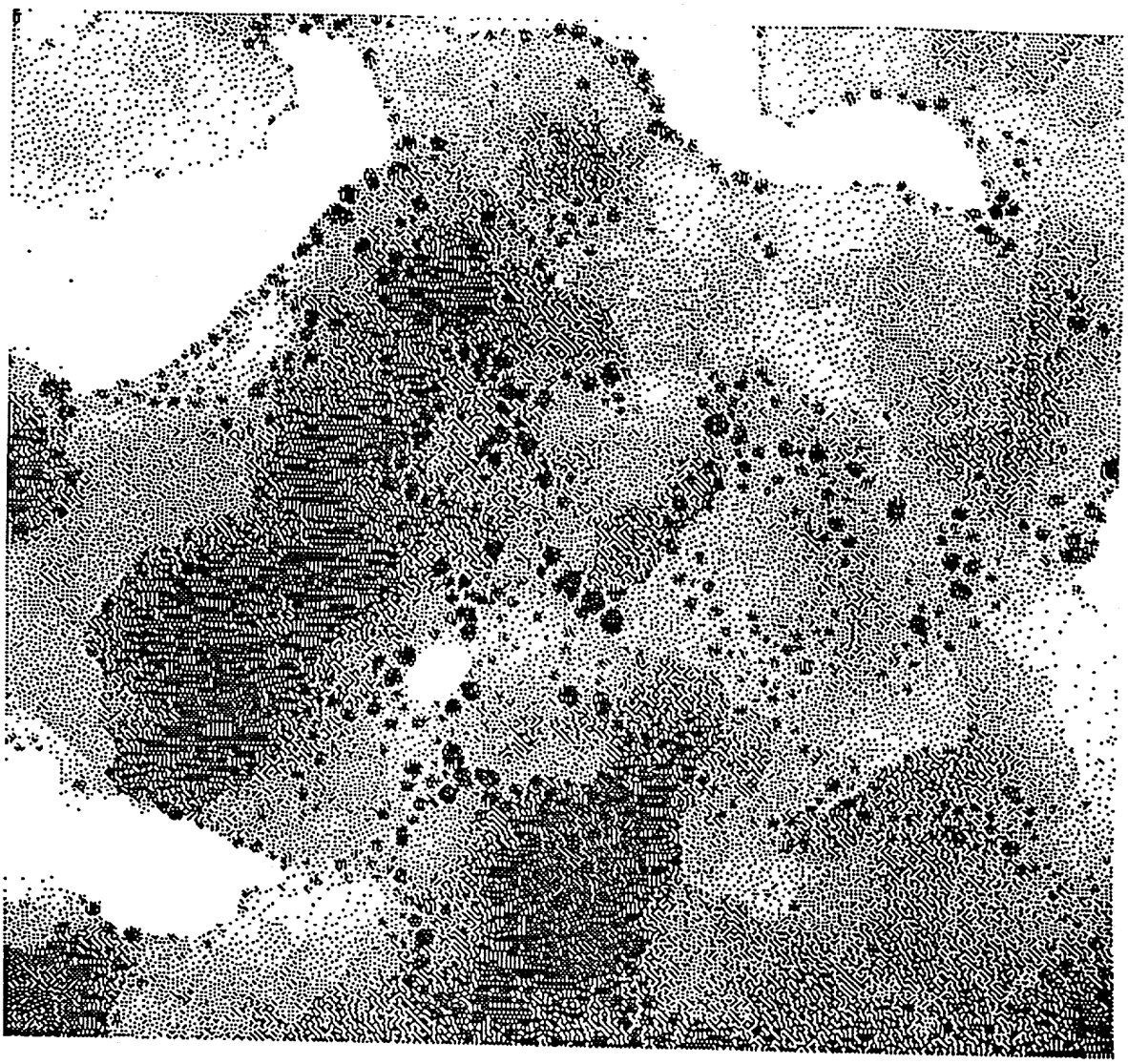

FIG. 1

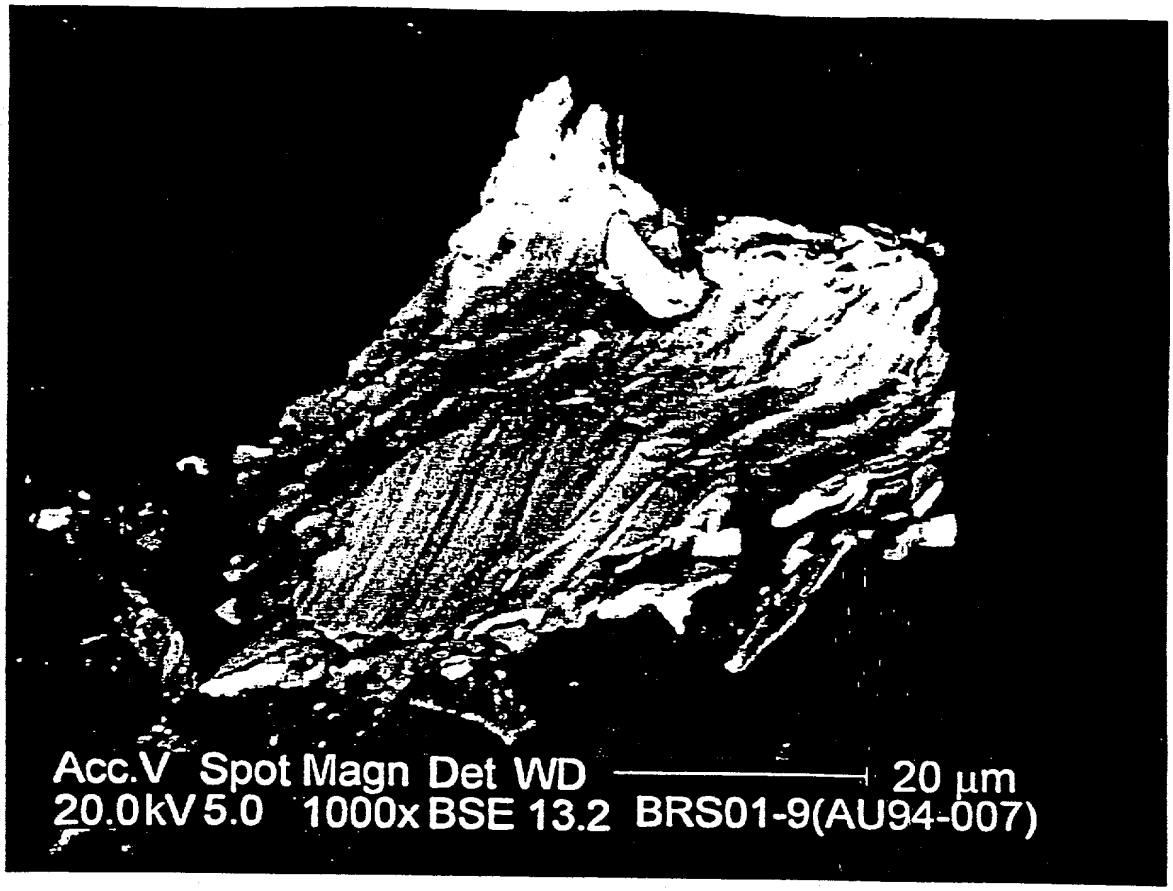
Acc.V Spot Magn Det WD
20 µm
20.0kV 5.0 1000x BSE 13.2 BRS01-9(AU94-007)

FIG. 2

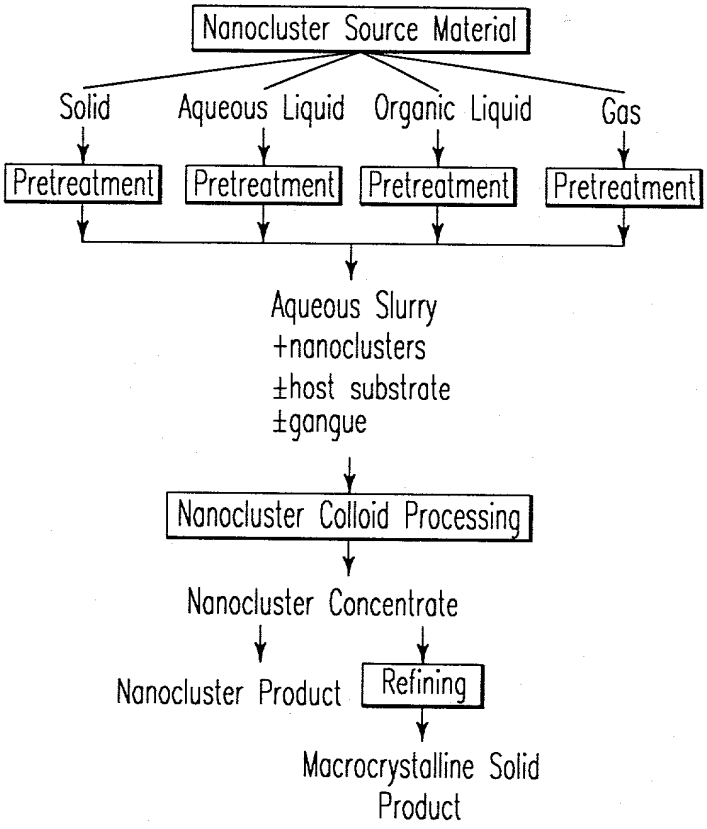
Nanocluster Source Material
Solid
Aqueous Liquid
Organic Liquid
Gas
Pretreatment
Pretreatment
Pretreatment
Pretreatment
Aqueous Slurry
+nanoclusters
±host substrate
±gangue
Nanocluster Colloid Processing
Nanocluster Concentrate
Nanocluster Product
Refining
Macrocrystalline Solid
Product

FIG. 3

FIG. 4A

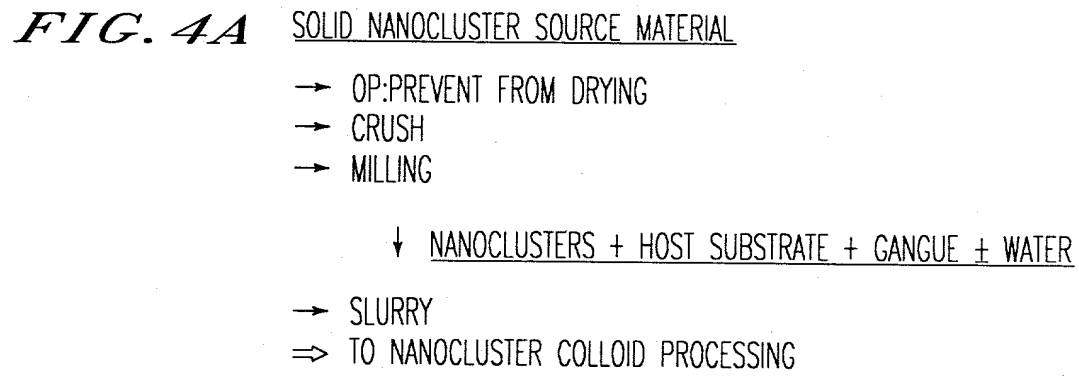
SOLID NANOCLUSTER SOURCE MATERIAL
OP:PREVENT FROM DRYING
CRUSH
MILLING
NANOCLUSTERS + HOST SUBSTRATE + GANGUE ± WATER
SLURRY
TO NANOCLUSTER COLLOID PROCESSING

FIG. 4B

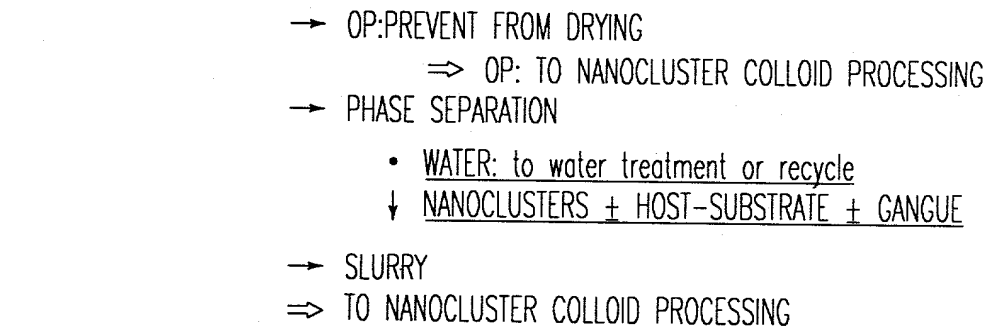
AQUEOUS LIQUID NANOCLUSTER SOURCE MATERIAL
OP:PREVENT FROM DRYING
OP: TO NANOCLUSTER COLLOID PROCESSING
PHASE SEPARATION
WATER: to water treatment or recycle
NANOCLUSTERS ± HOST-SUBSTRATE ± GANGUE
SLURRY
TO NANOCLUSTER COLLOID PROCESSING

FIG. 4C ORGANIC LIQUID NANOCLUSTER SOURCE MATERIAL

→ OP: PREVENT FROM DRYING

→ PHASE SEPARATION

- WATER: to aqueous liquid pretreatment, water treatment or recycle

↓ ORGANIC LIQUID + NANOCLUSTERS ± HOST-SUBSTRATE

→ PHASE SEPARATION

- ORGANIC LIQUID: to hydrocarbon processing

↓ NANOCLUSTERS ± HOST-SUBSTRATE ± GANGUE

→ SLURRY

⇒ TO NANOCLUSTER COLLOID PROCESSING

FIG. 4D GASEOUS NANOCLUSTER SOURCE MATERIAL

→ CONDENSOR

→ SCRUBBER(S)

- GAS: to gas processing

↓ WATER + NANOCLUSTERS ± HOST-SUBSTRATE

⇒ OP: TO NANOCLUSTER COLLOID PROCESSING

→ PHASE SEPARATION

- WATER: to water treatment or recycle

↓ NANOCLUSTERS ± HOST-SUBSTRATE

→ SLURRY

⇒ TO NANOCLUSTER COLLOID PROCESSING

- NANOCLUSTERS ± HOST SUBSTRATE ± GANGUE ± WATER (from pretreatment)

→ OP: SLURRY CONDITIONING
→ OP: PHASE SEPARATION

- WATER: to water treatment or recycle

↓ ORGANIC LIQUID + NANOCLUSTERS ± HOST-SUBSTRATE

→ COLLOID REGENERATION
→ GEL HYDRATION
→ COLLOID PEPTIZATION
→ OP: HEAT & PRESSURE TREATMENT
→ DISPERSION
→ NANOCLUSTER COLLOID DESORPTION
→ PHASE SEPARATION

- DEPLETED HOST SUBSTRATE + GANGUE: to recycle or tailings

↓ AQUEOUS NANOCLUSTER COLLOID SOLUTION

→ NANOCLUSTER COLLOID RECOVERY
→ PHASE SEPARATION, or
→ ADSORPTION

- WATER: to water treatment or recycle

↓ NANOCLUSTER CONCENTRATE

→ OP: REFINE

↓ MACROCRYSTALLINE SOLID PRODUCT

FIG. 5

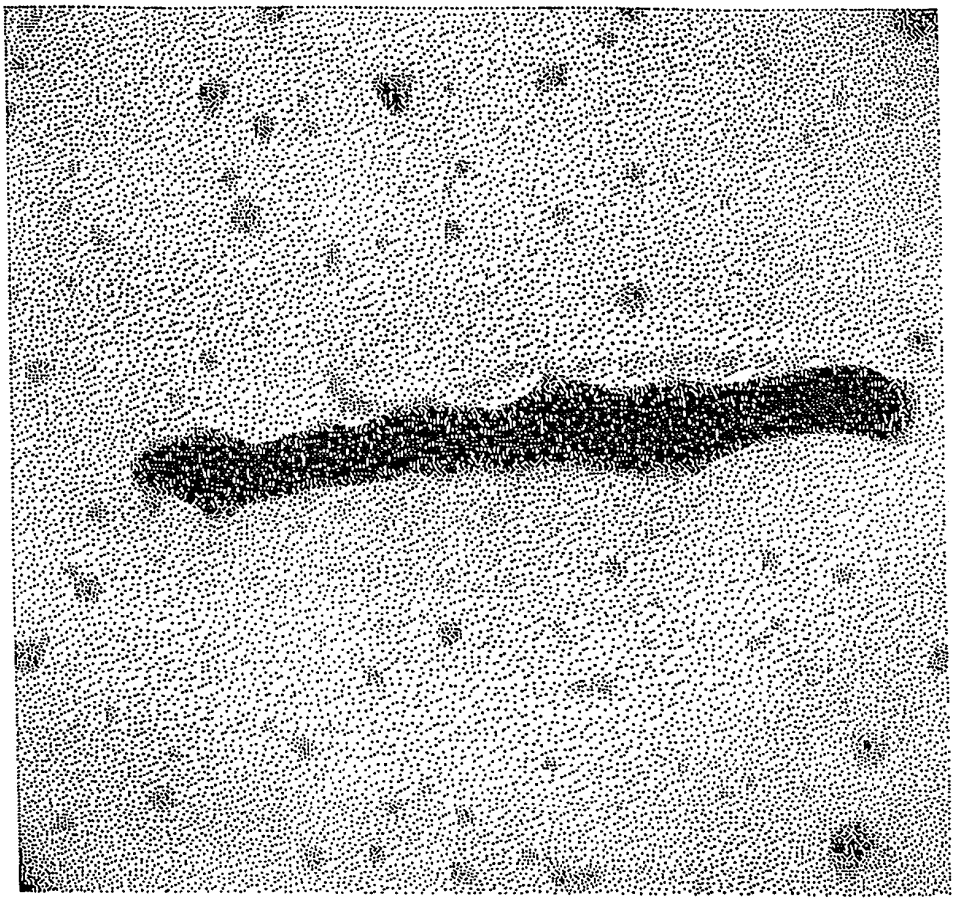

FIG. 6